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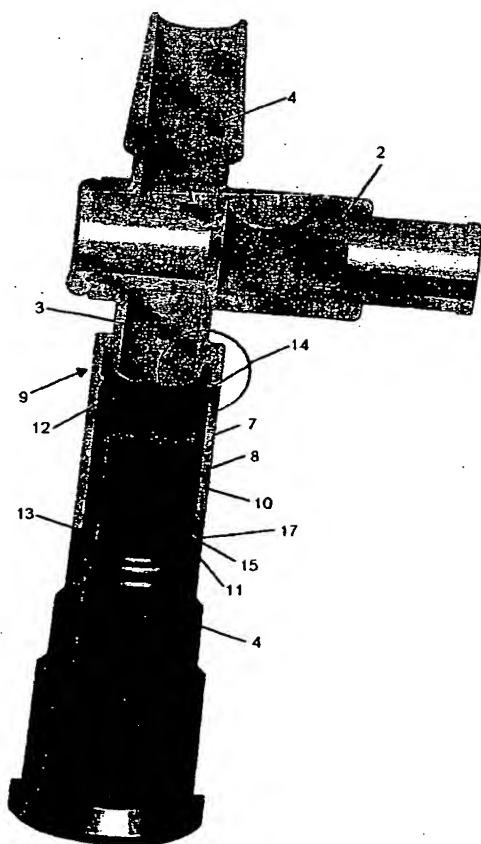
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(54) Title: A CONNECTING PIECE FOR A TUBING



(57) Abstract: The invention relates to a connecting piece (1) for a tubing (2) comprising a first unit (3) and a second unit (4), said first unit (3) comprising a first connecting element (5) for a tubing element (6) and a second connecting part (7) for the second unit (4), said second connecting element (7) comprising a tubular female part (8) for engagement with the second unit (4) and first sealing elements (9), and said second unit (4) comprising a tubular male part (10) with a collar (11) and second sealing elements (12) for cooperating with the first sealing elements (9), said first and second units (4) further comprising separator elements (13). The invention is characterized in that the sealing elements comprise a locking device (14); and that the separator elements (13) and the locking device are arranged at a distance in relation to each other. Good locking is accomplished as well as sealing of the joint without a risk of leakage and unintended separation of the two connecting parts; the lock, which is hence internal and protected, ensuring good engagement, while simultaneously the separator elements operate independently of both lock and sealing. Moreover, the sealing elements operate independently of direction and with little force for activation.

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A connecting piece for a tubing

5 The invention relates to a connecting piece for a tubing comprising a first unit and a second unit, said first unit comprising a first connecting element for a tubing element and a second connecting element for the second unit, said second connecting element comprising a tubular female part for engagement with the second unit, and first sealing elements, and said second unit
10 comprising a tubular male part with a collar; and second sealing elements for cooperating with the first sealing elements; said first and second units further comprising separator elements.

DE-U-29818311 teaches a connecting piece in particular for medical infusion systems. That connecting piece comprises a male and a female part, wherein
15 the male part is further provided with a collar with undercuts, said undercuts fitting into a corresponding collar on the female part such that the two undercuts combine to form a kind of hook connection, whereby the male and the female parts are securely locked by means of those devices when the connecting piece is assembled. However, it is associated with the drawback
20 that said locking elements that also serve more or less as separator elements are arranged externally on the connecting piece, with an ensuing increased risk of breaking off or becoming damaged during mounting or dismounting. Likewise, it is a matter of concern that when used repeatedly the hooks will come to suffer from material fatigue and break due to the forces to which
25 they are exposed, in particular during dismounting. The minute these locking elements break off, the connecting piece is very likely to leak, due to the sealing as such being accomplished exclusively by a press-fitting between the inner face of the female part and the outer faces of the male part.

30 Moreover, the system is associated with the drawback that when the male and the female part are to be separated it is possible to perform this only the

The connecting piece comprises two units – a first and a second unit – of which the one unit is constituted by a female part, while the second unit is constituted by a male part. During assembly of male and female part a close connection is provided due to the provision at the upper part of the male part of sealing elements and certain locking elements, on the one hand in the form of an annularly extending recess and, on the other, in the form of a flange. An annular recess fits into a corresponding annular bead mounted on the inner face of the female part, and where a click is provided, ie audible locking, when this recess engages around the bead. Moreover the female part comprises an annular recess, the side faces of which are axially parallel with the axis of the female part, and wherein they engage and enclose the flange of the male part. Firstly, good sealing is accomplished by this, since a sealing is provided both between recess and bead, which - as it is - also provide the locking device, and likewise a further safety sealing is accomplished between the flange and the annular recess. It is thus possible to avoid liquid seepage even when a liquid pressure of at least 125 mm bar is applied to the assembly.

At the opposite end of the female part, where the tubular part terminates, a delimiting edge is provided in the form of an edge that follows the shape of a wave, preferably with at least two tongues that are even and extend continuously in their circumference. The delimiting edge that follows the shape of a wave is congruent with a correspondingly configured collar that appears mounted around the outside of the male part and in the area that is at a distance, typically 1-2 cm, from the locking and sealing elements of the male part.

If a turning is subsequently performed of the male part, either in the one or the other direction, the inclining walls provided due to the waved shape on both the male and the female part will push against each other and hence

annular recess and without a risk of being positioned erroneously during assembly.

By providing a connecting piece according to the invention and as further
5 featured in claim 9, it is accomplished that the recess will, with the least possible resistance slide across the bead, while simultaneously the height of the bead as such brings about good locking and good sealing.

By providing a connecting piece according to the invention and as further
10 featured in claim 10, regulation of the liquid connection through the connecting piece is accomplished, since it is the primary objective of the connecting piece to adjust the emptying of bags, eg urine bags.

By providing a connecting piece according to the invention and as further
15 featured in claim 11, a convenient and simple manner of providing the valve's on/off function is accomplished.

By providing a connecting piece according to the invention and as further
20 featured in claim 12, it is accomplished that there is no risk of the displacer means sliding out of its housing when it is activated.

The invention further relates to use of the connecting piece as featured in claim 13, and wherein this connecting piece, typically to the female portion as such, is associated with a catheter or a tubing for being connected to a urine
25 bag, while the male part is connected to a tube or the tubing of a urine emptying bag, the idea behind the invention being that it is to be used for the emptying of leg or night urine bags to large collector receptacles. In that connection the male and female part will typically be disconnected, since, of course, the displacer means is closed such that no seepage of liquid occurs.
30 When the leg bag is replete, a male part with connection to a collector receptacle is seized and inserted into the connecting piece and the displacer

hollow and cylindrically tubular such that liquid is enabled to pass from the first connecting part 5 to the second connecting part 7.

Typically, between the first and the second connecting part a valve 30 is introduced, said valve 30 being in its inner cavity provided with a displacer means 31 that has an opening and a closing position. In the opening position liquid may penetrate through a bore opening in the displacer means, the outer face of the displacer means being congruent with the inner faces of the valve housing, while, in its closing position, it will perform a closing of the liquid passage that exists between the first and the second connecting part.

Moreover, at each end the displacer means is provided with so-called stops 32, ie annularly extending beads having a larger diameter than the displacer means and the interior diameter of the housing as such, whereby it is prevented that the displaceable displacer means 31 is offset entirely out of the housing during use thereof.

The second connecting part (7), which is thus a female part, encloses the second unit 4 of the connecting piece 1, which is, in principle, a male part, and comprising a tubular section of male part 10.

The second unit will, opposite the other end, be provided with a stub 35 into which a tubing can be shifted, whereby further liquid passage through the entire connecting piece 1 is enabled through this tubing 2. As mentioned, the second tubing comprises this male part, whose outer face is essentially congruent with the inner face of the female part and is delimited by a collar 11, said collar 11 having a delimiting 15 which follows the shape of a wave such that undercuts are not formed.

This means that the delimiting edge 15 of the collar is a continuously extending delimiting edge in such a manner that a connecting line between

The locking device 14 comprises essentially that the upper delimiting edge of the male part comprises an annular recess 20 which is thus open in radial direction. This recess, which will typically be about $\frac{1}{4}$ mm deep, will, during locking, enclose a bead 19 that extends annularly on the inner faces of the female part, designated first sealing elements 9, whereas the annular recess on the male part are designated second sealing elements 12, these two constructions, in addition to ensuring a locking between the male and the female parts, also contributing to ensuring a liquid-proof assembly between the male and the female part.

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The male part comprises a delimiting edge configured as an annularly extending flange 23, said annularly extending flange being delimited by taperingly extending delimiting side faces 25 that converge towards the delimiting edge 26 of the flange.

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The bead also having a taperingly extending face 27, the inclination of which corresponds essentially to the laterally facing, inclined side face of the annularly extending flange, small resistance is ensured when the male part is displaced into the female part, also since the flange has a smaller thickness than the remainder of the tubing thickness of the male part and therefore the flange part is more flexible.

20

The sealing elements 9 comprise elements on the female part in the form of an annular recess 21 that forms a kind of pocket and wherein the delimiting side faces 22 of this annularly extending recess 21 are axially parallel to the centre axis of the female part. Essentially, this annularly extending recess has a width dimension that corresponds to the thickness of the flange. When the flange is shifted down into this annularly extending recess, it will typically be pressed against the side faces, preferably the side face located medially to the recess, whereby an additional sealing is accomplished. At the same time this arrangement of the flange, and as will also appear from Figure 6,

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On the stub 35 of the male part there is also mounted a tubing 2 that is connected to a discharge/collector receptacle 37. When the leg bag 34 of the patient is thus filled, the discharge bag 37 will typically be mounted with the tubing 2, on which the male part is secured upwardly, into the female part as such. The displacer means is subsequently displaced in the valve to the effect that the flow of liquid travels unimpeded through the connecting piece, following which the urine collected in the leg bag 34 is discharged into the collector bag 37. Subsequently the collecting receptacle 37 can be moved, as the displacer means is yet again arranged such that there is no passage of liquid within the connecting piece, and the male part in the connecting piece is dismounted from the female part following which the leg bag 34 is ready for renewed use.

2. A connecting piece (1) according to claim 1, **characterized in** that the separator elements (13) comprise the collar (11), the delimiting edge (15) of said collar being a continuously extending delimiting edge, whereby a connecting line between any two points along the delimiting edge (15) in the peripheral direction of the male part (10) is less than 90° in relation to the axial extension of the male part (10) and the female part (8).

3. A connecting piece (1) according to claims 1-2, **characterized in** that the delimiting edge of the collar provides at least two tongues (16), said delimiting edge being congruent with the delimiting edge (17) of the female part.

4. A connecting piece (1) according to any one of the preceding claims, **characterized in** that the delimiting edge of the collar follows the shape of a wave and has a uniform distance between the wave crests (18).

5. A connecting piece (1) according to any one of the preceding claims, **characterized in** that the first sealing elements (9) comprise an annularly extending bead (19) arranged on the inner face of the female part; and that the second sealing elements (12) comprise an annular recess (20) arranged on the outer face of the male part, and which also provide the locking device (14).

6. A connecting piece (1) according to any one of the preceding claims, **characterised in** that the first sealing elements comprise an annular recess (21), the delimiting side faces (22) of which are essentially axially parallel with the centre axis of the female part; and that the second sealing elements (12) comprise an annular flange (23) for providing the delimiting edge (24) of the male part.

- 1) Connecting piece
- 2) Tubing
- 3) First unit
- 4) Second unit
- 5 5) A first connecting element
- 6) A tubing element
- 7) A second connecting element
- 8) A tubular female part
- 9) First sealing elements
- 10 10) A tubular male part
- 11) Collar
- 12) Second sealing elements
- 13) Partition elements
- 14) Locking device
- 15 15) Delimiting edge of collar
- 16) Tongues
- 17) Delimiting edge of female part
- 18) Wave crests
- 19) Inner face of female part, arranged annular bead
- 20 20) Outer face of male part, annular recess
- 21) Annular recess
- 22) Delimiting side faces of annular recess
- 23) Annular flange
- 24) Delimiting edge of male part
- 25 25) Delimiting side faces of annular flange of male part
- 26) Delimiting edge of flange
- 27) Inclined face of annular bead of female part
- 28) Medially arranged side face for annular recess
- 29) Bevelling
- 30 30) Valve
- 31) Displaceable displacer means

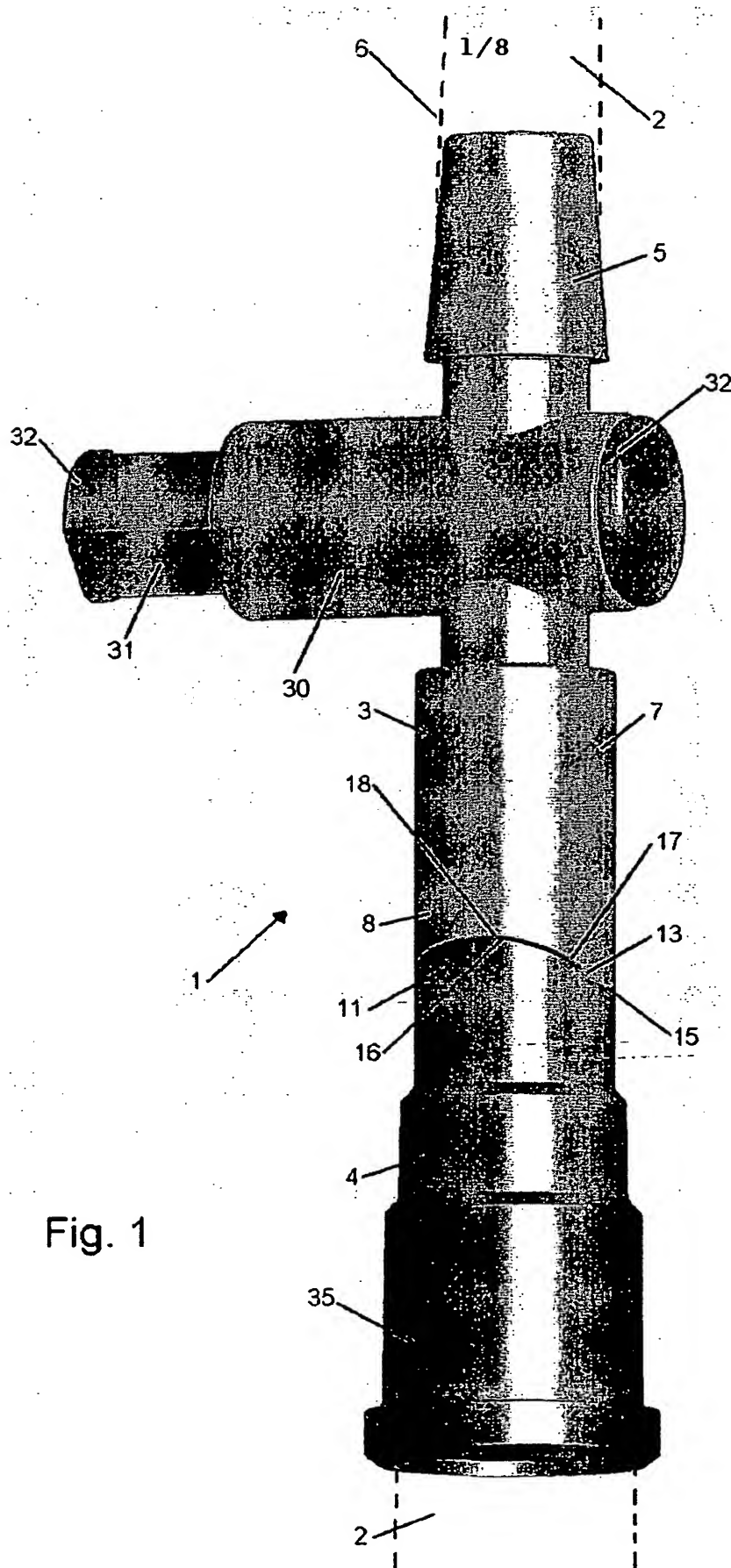


Fig. 1

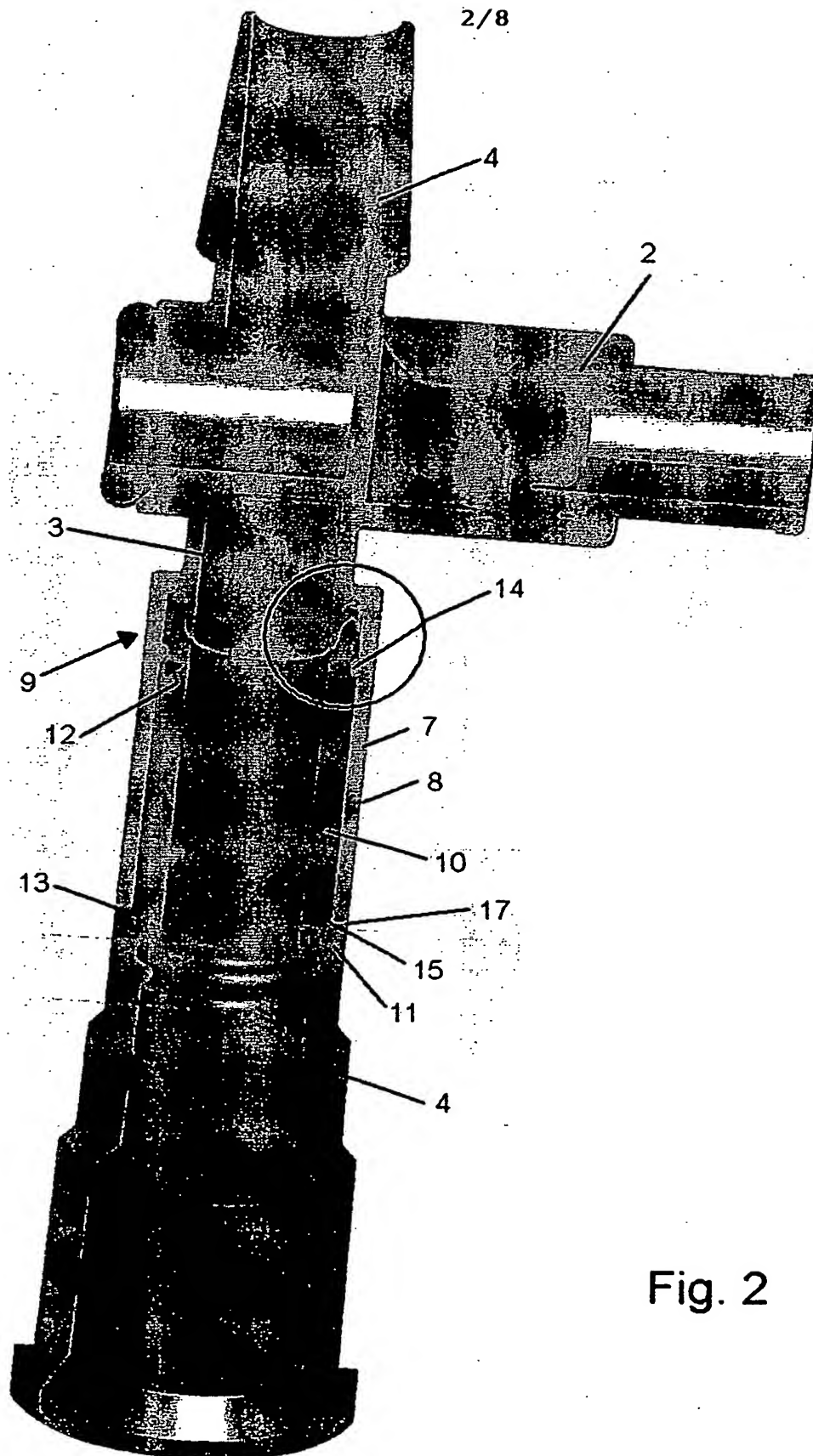


Fig. 2

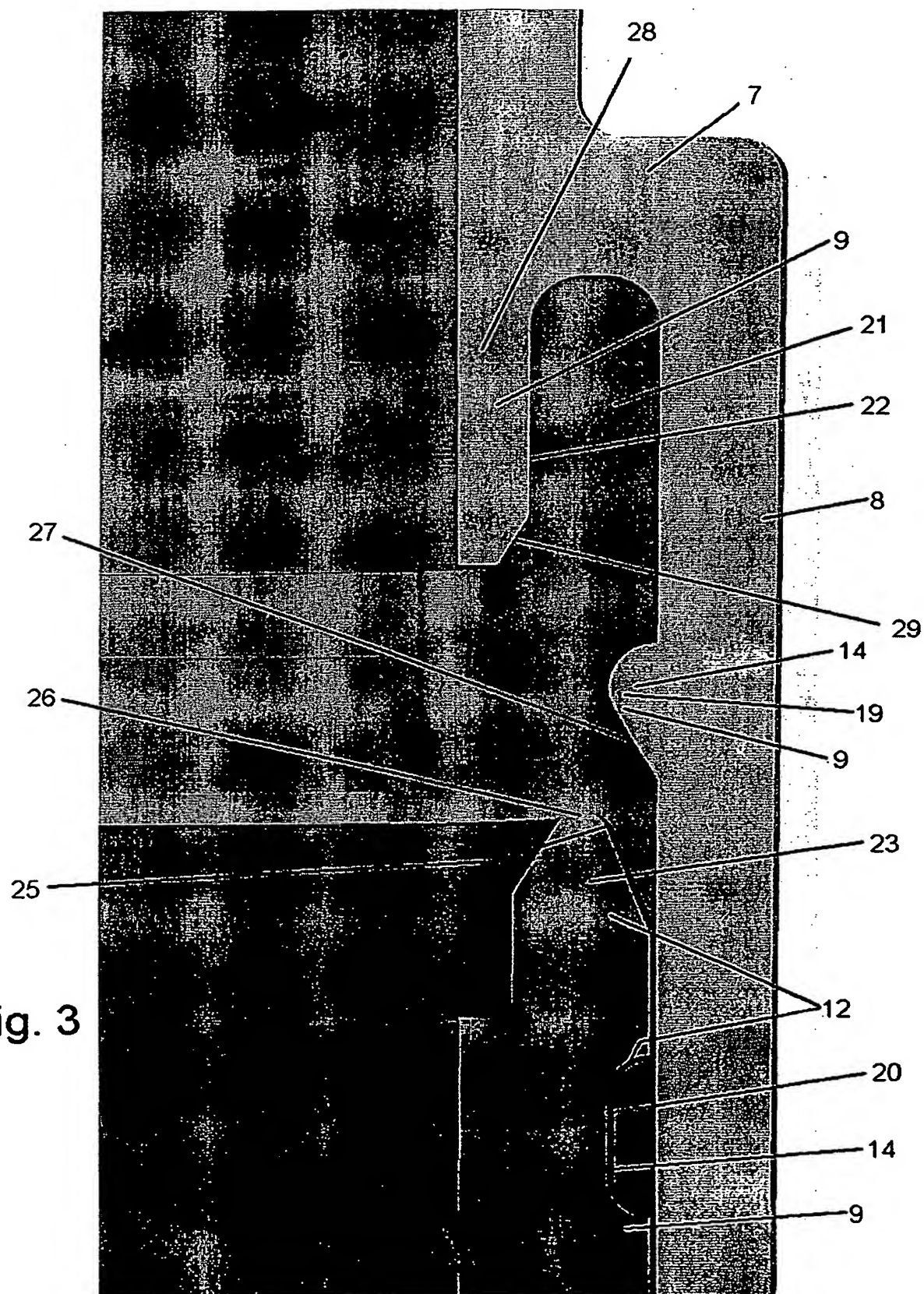


Fig. 3

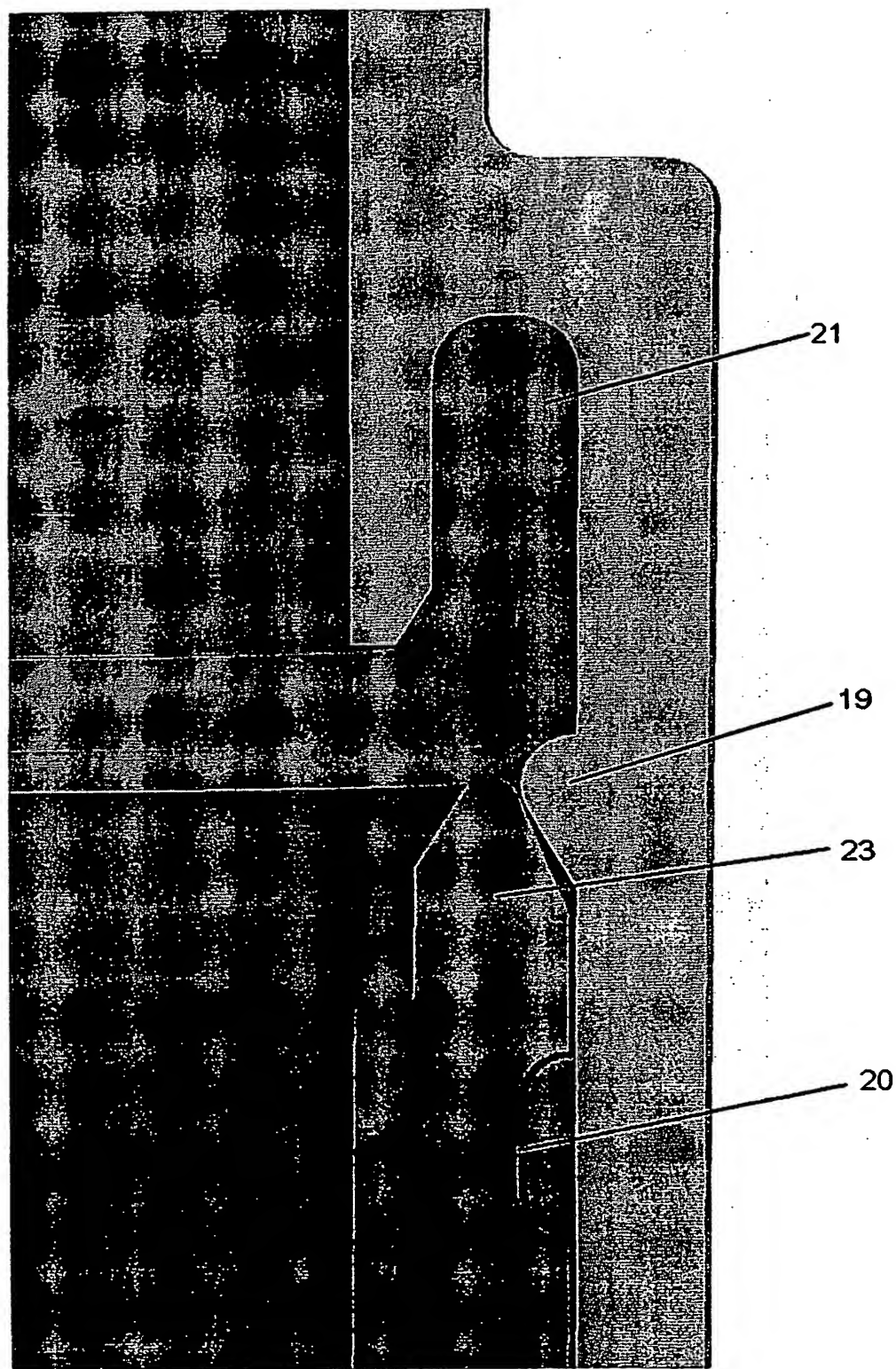


Fig. 4

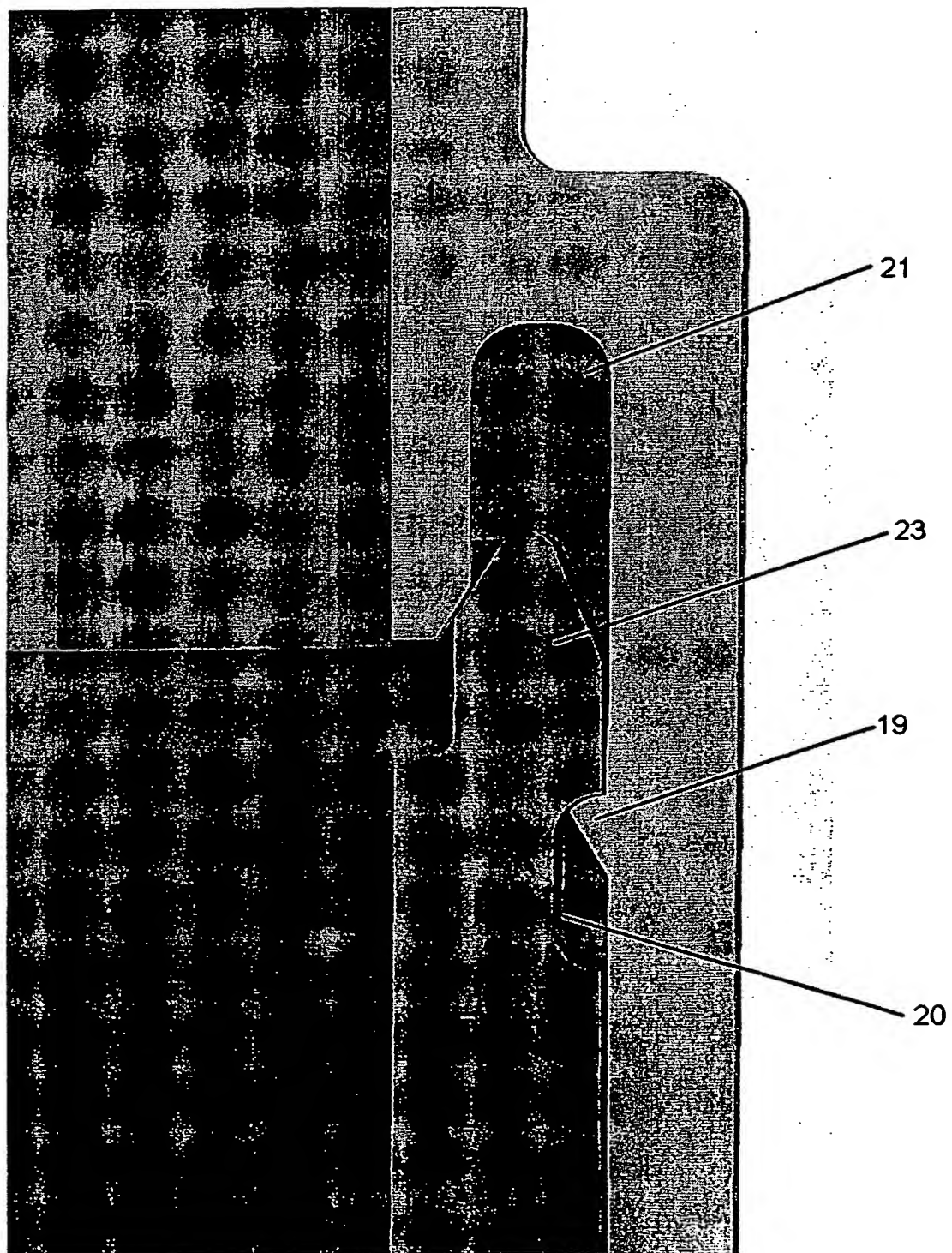


Fig. 5

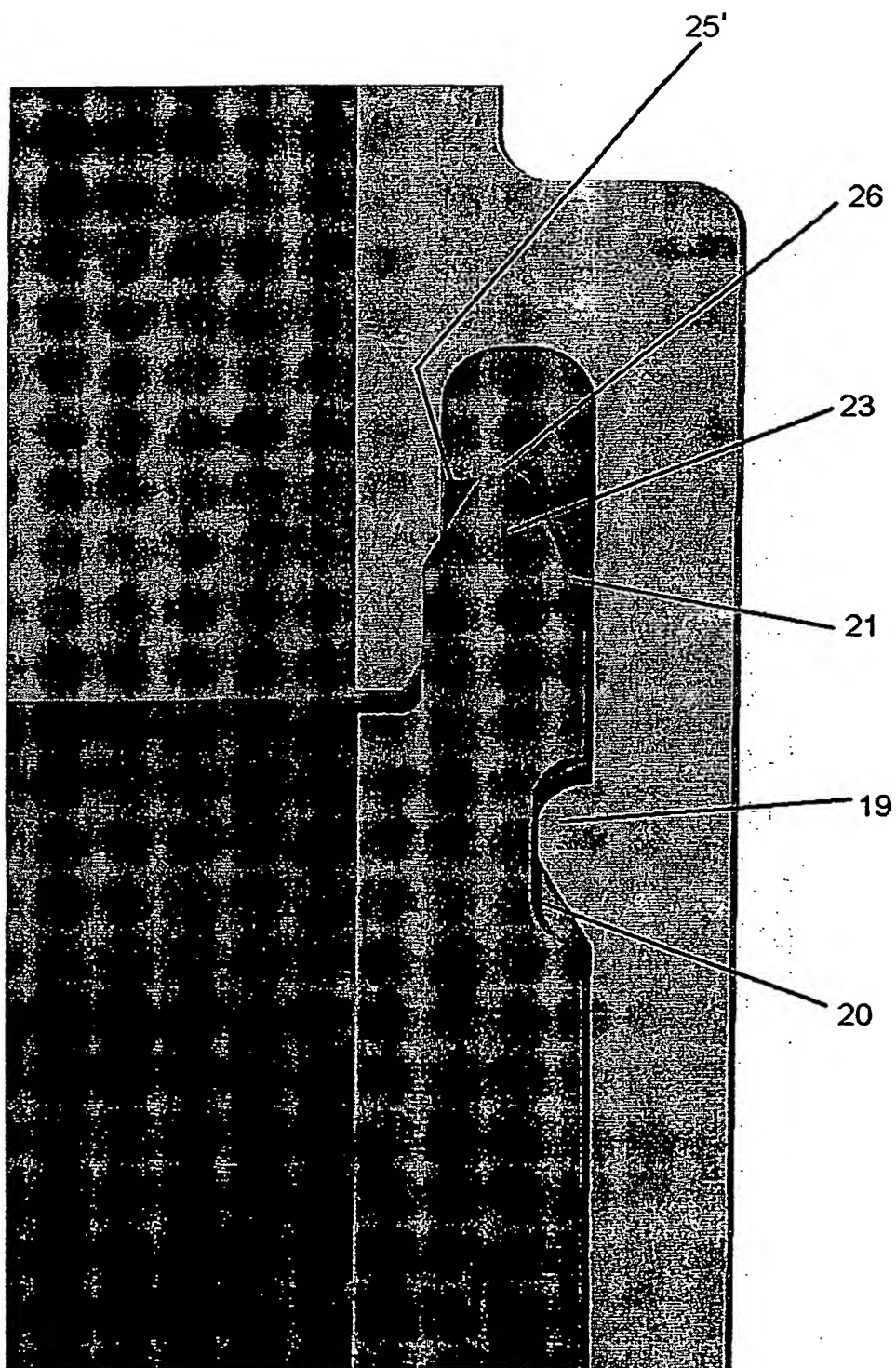


Fig. 6

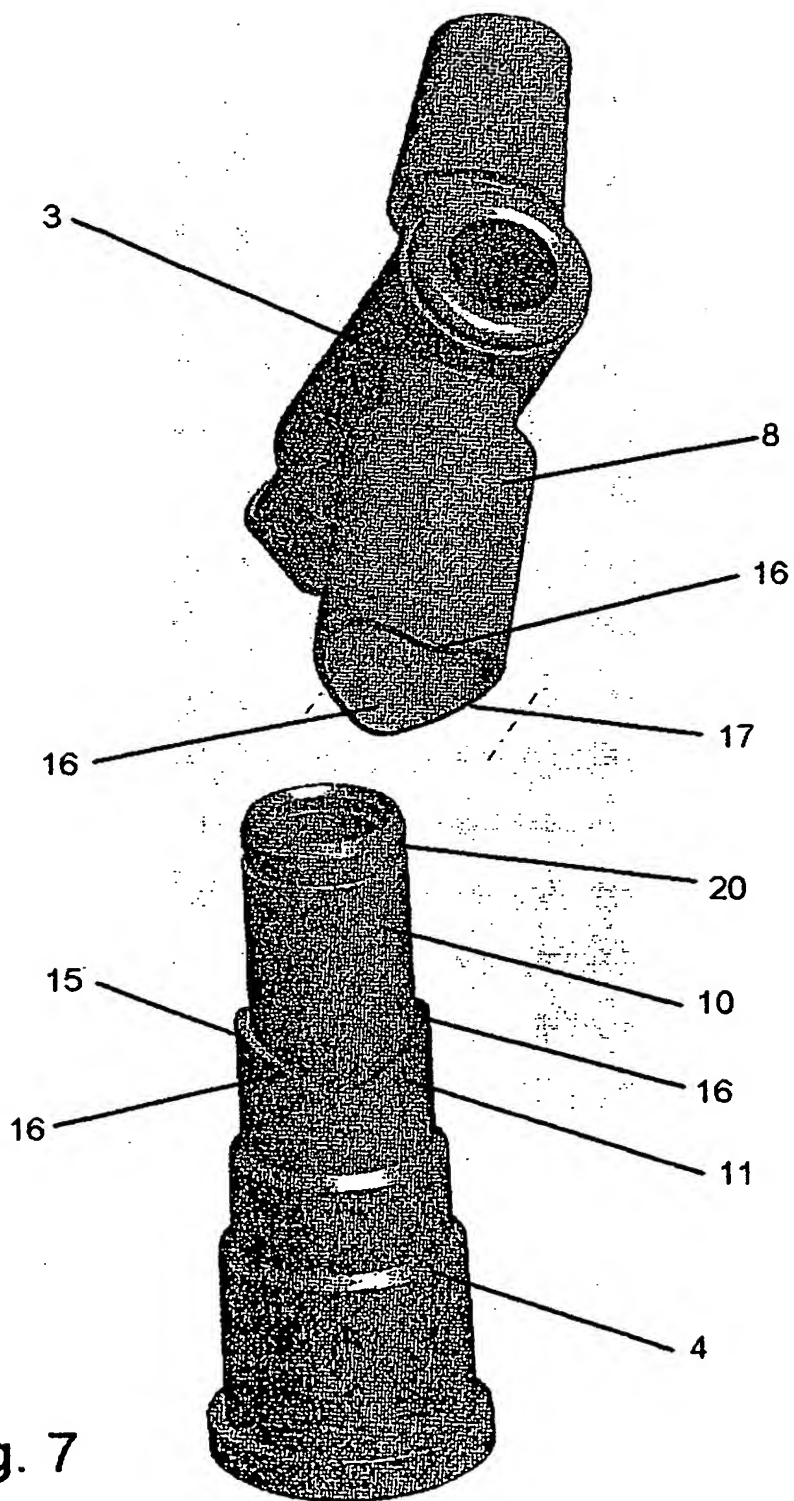


Fig. 7

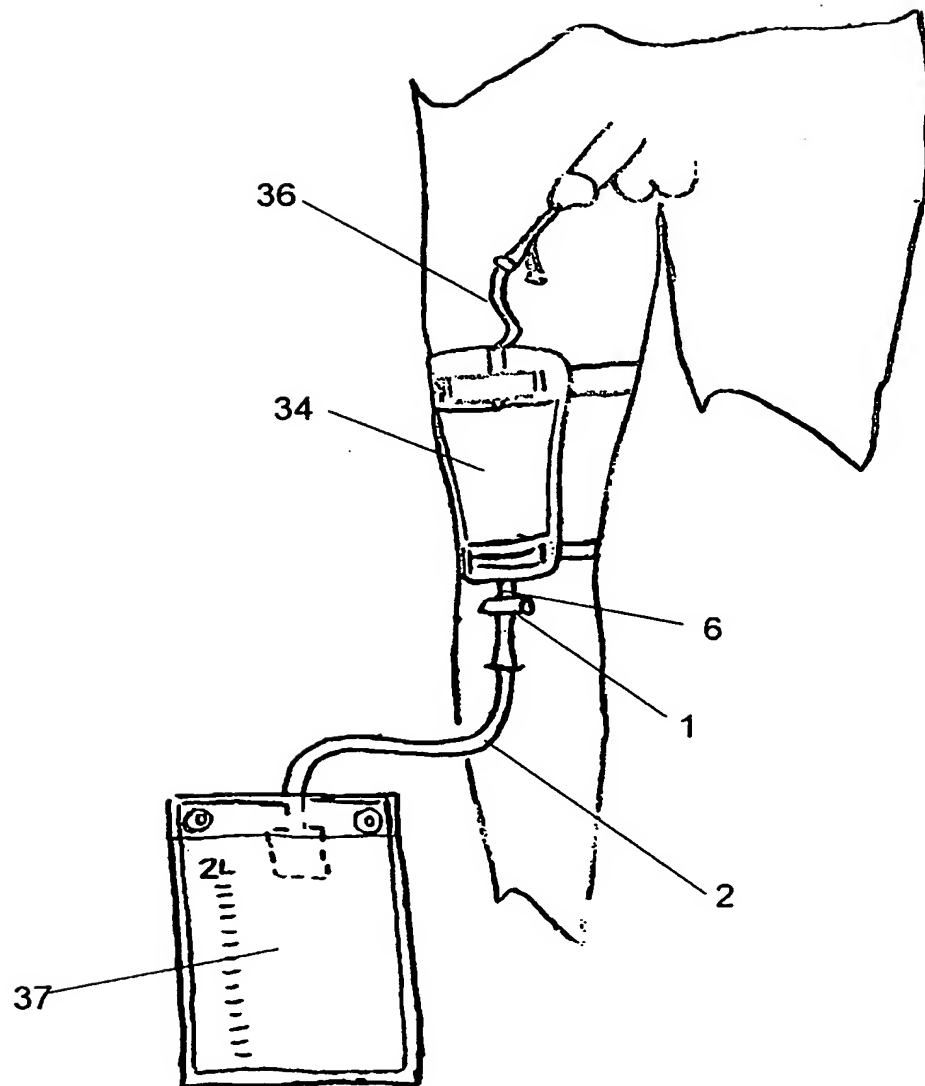


Fig. 8

INTERNATIONAL SEARCH REPORT

International Application No

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61M39/10 //A61F5/44

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61M A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

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